REMARKS

Claims 1 and 18 have been amended. Claim 24 has been renumbered and amended. Accordingly, claims 1-29 remain under prosecution in this application.

Renumbered Claim 29

The Examiner correctly stated that claim 24 (as newly submitted in paper no. 18) was improperly numbered as claim 24 (there is already a claim 24 of record) and should have been numbered claim 29. The undersigned has submitted herewith amended claim 29 to correct this error.

35 USC §112; first paragraph

Claims 1-14, and 18-29 are rejected under 35 USC §112, first paragraph as based on a disclosure which is non-enabling. Specifically, the Examiner is objecting to the phrase "purely subsurface" kissing unbond as having not been described in the specification. The undersigned strongly disagrees with the Examiner's rejection. Although the words "purely subsurface" are not found in the specification, that fact, alone, does not necessarily make the specification non-enabling. Any kissing unbond, by definition, is purely a subsurface disjunction. I refer to the enclosed article entitled *Non-Destructive Testing of Structural composites and Adhesively Bonded Composite Joints: Pulsed Thermography*, footnote 1 on page 1512 wherein a kissing disbond is defined. As disclosed in the above referenced footnote, a kissing disbond necessary relates to the disbonding of **sub**strates, detecting unbond defects necessarily relates to purely subsurface defects (i.e. defects which are not present at the surface of a specimen but only present at the **sub**surface of a specimen). However, in order to reduce the issues on appeal, the undersigned proposes amending claims 1, 18, and 29 to remove the word "purely", thereby overcoming this rejection. By making such an amendment, the issues disputed in this case are reduced for appeal and accordingly, the undersigned believes that it is proper for the Examiner to enter the after final amendments to claims 1, 18 and 29.

35 USC §102

Claims 1, 3, 18, 19, 27, and 28 are rejected under 35 USC §102 as being anticipated by Devitt.

The method of claim 1 requires the method step of: "applying a force to the specimen, wherein the magnitude of the force is sufficient to exacerbate a thermal discontinuity caused by a subsurface kissing unbond defect of the specimen. . ." Devitt does not teach or suggest this applying step for two reasons. Firstly, Devitt does not address kissing unbond defects or the problems associated with detecting kissing unbond defects (and therefore it cannot possibly teach a method step relating to kissing unbond defects), and, secondly, even if Devitt is considered a valid teaching regarding detecting kissing unbond defects, the portion of Devitt that teaches applying a force to a specimen does not result in exacerbating a thermal discontinuity caused by a subsurface kissing unbond defect (as required by claim 1) but rather results in reducing a thermal discontinuity caused by a subsurface kissing unbond defect. These two points are developed more fully below.

With respect to the first point, attached hereto is a printout from the website of the University of Bristol NDT Laboratory. On page 3 of this printout, kissing bonds are shown and described. As shown and described in the University of Bristol printout, kissing bonds (or defects in kissing bonds) occur in adhesive joints. They are caused by adhesive failures or adhesive defects. Kissing bonds and/or defects in kissing bonds, by their very nature, do not penetrate to the surface of a substrate, but rather they reside in, and only in, a subsurface "strata" of the specimen and run parallel to the external surface of the specimen. Nowhere does Devitt teach or disclose the peculiarities associated with testing for defects in kissing bonds and accordingly, it cannot be fairly used to teach any methods associated with detecting such kissing unbonds.

Secondly, even if Devitt is a valid reference for teaching methodology associated with detecting kissing unbonds, the method disclosed in Figure 1 (as relied on by the Examiner) is a method wherein a sample is stressed in fixture 68 in a way that causes the surface of interest to be put into tension "to open the crack so that it will be detectable at the component surface

18." (Column 7, lines 32-34). It is clear that if a kissing disbond is tensioned in this way, it would draw the surfaces surrounding the disbond tighter against each other thereby reducing (lessening) the thermal discontinuity (not exacerbating the discontinuity). It is obvious that there are only two possible ways to "open the crack so that it will be detectable at the component surface." The first way is to stress the sample such that a crack (which is already present at the surface of the sample) is made larger. The second possible way to "open a crack so that it is detectable at a component surface" is to stress the specimen such that a subsurface crack (i.e. a crack which resides solely below the surface of the specimen and does not, in any way, penetrate through to the surface of the specimen) is cause to migrate to, and evidence itself at, the surface of the specimen. In the first scenario, a crack which resides at the surface of the specimen (but is just not detectable without stressing the specimen) is not, by definition, **sub**surface and accordingly it is not a kissing unbond and thus such a method does not teach or suggest the claimed method. In the second scenario, where a sample is so stressed so that what started out as a subsurface crack has now migrated to the surface, cannot be fairly classified as a nondestructive test (the test causes the crack to penetrate into an area of the specimen where it did not exist prior to the test) as required by claim 1 and claim 24.

In view of the arguments set forth above, the undersigned believes that claims 1, 18, and 29 (and their dependent claims) overcome the rejection under 35 USC §102 and §103 and accordingly, the undersigned believes that all claims of record are now in condition for allowance.

Respectfully submitted,

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MARKED UP VERSION OF ALL AMENDED CLAIMS

1. (Thrice Amended) A method for non-destructively evaluating a specimen for the presence of kissing unbond defects, comprising the steps of:

heating the specimen;

applying a force to the specimen, wherein the magnitude of the force is sufficient to exacerbate a thermal discontinuity caused by a [purely] subsurface kissing unbond defect of said specimen; and

generating an infrared image to detect the presence of a [purely] subsurface kissing unbond defect .

18. (Thrice Amended) An apparatus for non-destructively evaluating a specimen for the presence of kissing unbond defects comprising:

a heat-sensitive image generator that generates thermographic images;

a heater that increases the temperature of the specimen; and

means for applying a force to the specimen, wherein the applying means changes at least one dimension of a [purely] subsurface kissing unbond defect in the specimen to create a thermal discontinuity.

24. (First Amended) A method for non-destructively evaluating a specimen for the presence of kissing unbond defects, comprising the steps of:

heating the specimen;

applying a force to the specimen, wherein the magnitude of the force is sufficient to exacerbate a thermal discontinuity caused by a [purely] subsurface kissing unbond defect of said specimen; and

generating an infrared image to detect the presence of a [purely] subsurface kissing unbond defect, wherein the applying step includes disturbing the specimen using ultrasonic or acoustic energy.